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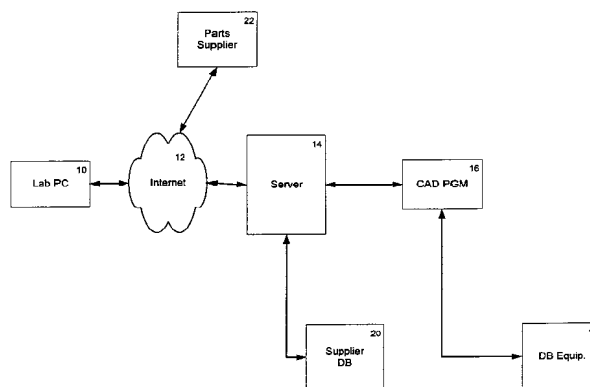
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(54) Title: SYSTEM AND METHOD FOR THE PURCHASE OF SPARE PARTS



(57) Abstract: A system and method of using computer-aided design (CAD) and product images to visually orient a buyer with a particular piece of equipment. Engineering diagrams are stored in a database, retrieved to a server and displayed at a buyer's workstation. Using CAD, every component of a piece of equipment is identified and can be selected with a pointing means. By selecting a part in a diagram, a buyer obtains further information on that part in order to allow ordering of the part to take place. Layering representations in a CAD database allow the buyer to proceed through the database in increasing detail until a specific part is identified and isolated. Layers are cross-linked in the database to ordering information. Products and information a buyer may need in conjunction with the requested spare part are also presented to the buyer. When the buyer identifies a spare part to be ordered, select the part retrieves detailed ordering information including pricing. The buyer subsequently clicks on an "order" button to order the desired spare part. The system builds a database of spare parts that have been ordered. The database is indexed by other variables including the organization ordering, and the equipment to which the spare part belongs. Data mining can take place to assist in stocking the spare parts that are most likely to fail and to provide additional information to the designers of the scientific equipment regarding how to improve the quality of that equipment. Whether related parts will also be needed can be presented to the buyer.



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1 **Title:** SYSTEM AND METHOD FOR THE PURCHASE OF SPARE PARTS

2
3 **Field of the Invention**

4 This invention relates generally to the ordering of spare parts . More
5 particularly, the present invention is an integrated system using CAD, diagrams,
6 images, and figures to allow a buyer to visually order spare parts for equipment of all
7 types.

8 **Background of the Invention**

9 In any setting where equipment is heavily used and tied to productivity,
10 efficiency is predicated in large measure upon the functioning of various equipment.
11 One such setting is a laboratory. When laboratory equipment ceases to function, test
12 results are late and/or less tests are run. As a result, the laboratory loses profit. When
13 a breakdown occurs, it is typically the scientist working in the lab, and not an
14 engineer who designs equipment, who must order repairs and spare parts for the
15 laboratory equipment that is no longer functioning. Thus buyers of spare parts for
16 laboratory equipment are scientists and not engineers. Such personnel are not
17 familiar with part numbers and specifications, yet often need to order spare parts.
18 This is also true in many equipment-oriented settings.

19 Systems for purchasing spare parts are not particularly buyer friendly. For
20 example, if a particular spare part is needed, a scientist may be faced with a wide
21 variety of spare parts all of which have similar names. It is difficult, if not
22 impossible for the scientist to precisely know what spare part is to be ordered and
23 what is the precise part number and cost for that spare part.

24 Despite these problems, spare parts account for a large percent of the business
25 of suppliers. Particularly in the field of laboratory instrumentation, supplying spare
26 parts is a multi-billion dollar market. It is a highly profitable business, yet it does not
27 get the same attention as the business of selling equipment. Thus, despite the
28 lucrative nature of the spare parts business, few resources are directed toward
29 supporting spare parts sales and identification for specific equipment.

30 Yet another issue arises with respect to providing spare parts for equipment.
31 Since automated systems for ordering spare parts do not generally exist, the ability to
32 review spare parts orders, to data mine that information and to determine weaknesses
33 in equipment designs is lacking. With automated ordering systems lacking, the ability
34 to cross-link data mined information is lacking as well.

1 What would be truly useful is a system and method for ordering of spare parts
2 for laboratory equipment that is buyer friendly to the scientist or other less-
3 knowledgeable buyer. Such a system would allow a scientist to identify the exact
4 equipment that is being used in the work place, the precise part needed, its
5 nomenclature, and the cost of the parts that are used in the specific equipment
6 possessed by the buyer. Such a system would avoid the use of a parts catalog with all
7 of the confusing information contained therein.

8 Summary of the Invention

9 It is therefore an objective of the present invention to increase the productivity
10 of laboratories and other equipment-based work areas by simplifying the process of
11 ordering spare parts for equipment.

12 It is a further objective of the present invention to reduce the cost of suppliers,
13 thereby providing an efficient method for selling spare parts to laboratories.

14 It is still another objective of the present invention to allow scientists to order
15 spare parts via the Internet.

16 It is a further objective of the present invention to remove ambiguity in the
17 identification of spare parts for specific equipment.

18 It is still another objective of the present invention to be able to analyze the
19 order rate of spare parts to determine those parts that are most likely to fail and to
20 allow the stocking of those types of spare parts for future orders.

21 It is a further objective of the present invention to cross-link a spare parts
22 order with other likely needed parts and/or information and present said parts and/or
23 information to a buyer.

24 It is still another objective of the present invention to be able to analyze spare
25 part ordering data to enhance the design of scientific instruments.

26 It is a further objective of the present invention to permit the ordering of spare
27 parts via a graphical buyer interface to allow precise identification of parts.

28 It is a further objective of the present invention to integrate computer-aided
29 design (CAD) with Internet linking to allow the ordering of spare parts.

30 It is still another objective of the present invention to integrate image files into
31 an automated system for ordering spare parts.

32 These and other objectives of the present invention will become apparent to
33 those skilled in the art from a review of the specification that follows.

1 The present invention comprises a system and method of using computer-
2 aided design and other diagrams and potentially digital photography by a buyer to
3 orient himself visually with a particular piece of equipment. Engineering diagrams
4 are stored in a database and retrieved to a server and displayed over the Internet on a
5 buyer's workstation. Using computer-aided design, every component of a piece of
6 equipment is identified and is able to be designated by a pointing means such as a
7 mouse, track ball or interactive method known in the art. By pointing and clicking on
8 a particular part in a diagram, a buyer can obtain further information on that part in
9 order to allow ordering of the part to take place.

10 The system allows buyers to navigate through any particular diagram,
11 enlarging or decreasing the view of the part so that a specific part can be precisely
12 identified.

13 Various layers of representation are present in the CAD database so the buyer
14 can proceed through sequential layers of the database in increasing detail until a
15 specific part is identified and isolated.

16 The various CAD information and layers are cross-linked in the database to
17 ordering information such as the identification of the source of the spare part and the
18 price. Specific products or information a buyer may also need in conjunction with the
19 requested spare part are also presented to the buyer for suggestive sale. Once a buyer
20 identifies a spare part to be ordered, the buyer simply clicks on the spare part and
21 retrieves detailed information on the spare part to be ordered including its price. The
22 buyer subsequently clicks on an "order" button to order the desired spare part.

23 The database of the present invention comprises many different types of
24 equipment with sequentially increasingly detailed layers of information about the
25 parts that comprise the individual piece of equipment. Over time, a database of spare
26 parts that have been ordered is accumulated. This database is kept based on a spare
27 part ordered, organization ordering a spare part, and the equipment to which the spare
28 part belongs. In this fashion, various "data mining" can take place to assist in
29 stocking the spare parts that are most likely to fail and to provide additional
30 information to the designers of the scientific equipment regarding how to improve the
31 quality of that equipment. Further, whether related parts will also be needed can be
32 presented to the buyer.

1 Other features and functions of the present invention will become apparent to
2 those skilled in the art from a review of the figures and detailed description that
3 follows.

4 **Brief Description of the Figures**

5 Figure 1 illustrates the overall architecture of the present invention.

6 Figure 2 illustrates the communications sequence of the present invention.

7 Figure 3 illustrates a typical CAD presentation to the laboratory workstation.

8 Figure 4 illustrates a typical parts list.

9 Figures 5A and 5B illustrate the operation of one embodiment of the present
10 invention

11 **Detailed Description of the Invention**

12 As noted above, the present invention comprises a system and method for
13 ordering parts for equipment. It will be appreciated by those skilled in the art that
14 techniques of the present invention are applicable to literally any equipment where a
15 buyer desires to order spare parts for equipment. For purposes of this application,
16 laboratory equipment will be discussed. However, as noted above, other types of
17 equipment will also be served well by the present invention.

18 Each laboratory has a number of different types of equipment which may,
19 from time to time, require repairs. When this is the case, laboratory workstation **10**
20 logs onto the Internet **12** and contacts server **14** of the present invention. Server **14**
21 comprises communications hardware and software to communicate over the Internet.
22 Additionally, server **14** comprises software that allows the combination of the output
23 from a CAD program **16** with links to sources of spare parts for any part desired.

1 Laboratory workstation **10** sends a query to server **14** to determine if the
2 particular type of equipment requiring repair is resident in the CAD program database
3 **18**. Server **14** transmits the inquiry regarding specific equipment to the CAD program
4 **16** which in turn queries its own database **18** to determine if the equipment is present
5 in the database. If the equipment is present, an “exploded view” of the equipment is
6 sent via server **14** back over the Internet **12** to laboratory workstation **10**. Workstation
7 **10** displays the image comprising the exploded view. The image comprising the
8 exploded view can be CAD, digital, or any image format where links may be
9 imbedded. Using indicating means such as a mouse, track ball, touch pad, or any
10 other pointing type device, the buyer of laboratory workstation **10** designates the
11 particular part or sub-assembly that is desired to be purchased or replaced.

12 Each part displayed to the laboratory workstation **10** comprises an underlying
13 link to the server database **20**. When the buyer indicates a particular part or sub-
14 assembly, a message comprising the link is sent to the server **14** and then to the CAD
15 program **16** to display a more detailed view of the particular part that is desired to be
16 ordered. Simultaneously, the system, via a lookup table or other means, retrieves
17 information from database **20** regarding the source of the particular part is question
18 and pricing information, if any. The system further retrieves information, via a
19 lookup table or other means, from database **20** regarding cross-referenced items, such
20 as parts or information, without limitation. Cross-referenced parts would be parts that
21 may also need replaced in conjunction with the selected part. For instance, o-rings,
22 washers, or a two-centimeter wrench may be needed to properly install the part.
23 Cross-referenced information may include instructions on how to install the part
24 ordered, a reminder that servicing the part is required in a certain number of years, or
25 guarantees that come with the part.

26 The more detailed diagram of the part that is desired is then displayed on the
27 buyer PC **10**. This page is displayed to the buyer together with an indicator of
28 whether the buyer wishes to buy the part and/or cross-referenced items or not. If the
29 buyer wishes to buy the part(s), the buyer causes the laboratory workstation **10** to
30 send an appropriate message over Internet **12** to server **14**.

31 Server **14** then places the order from supplier **22**, who is the supplier of the
32 spare part(s) in question. This purchase occurs via methods of electronic commerce
33 known in the art. The part or parts is delivered subsequently to the laboratory
34 workstation location **10**.

1 Electronic commerce aspects of the present invention take place, as noted
2 above, in a normal fashion. This can comprise laboratory buyer station **10** pre-
3 registering with server **14** with all information necessary to purchase laboratory parts.
4 Alternatively, such information can be provided to server **14** at the time of purchase.

5 Referring now to **Figure 2**, the communications sequence is illustrated. With
6 the web enabled system of the present invention, as buyer having a laboratory
7 workstation sends an initial query **30** over the Internet to the server of the present
8 invention. The query contains information that allows the server to make a query **32**
9 to the CAD to retrieve the CAD image of a particular piece of equipment. The CAD
10 system which may comprise software that is resident on the server retrieves the CAD
11 image from its database **34**. The database image is then provided back to the CAD
12 system **36**, which in turn provides that image **38** in the form of a web page which is
13 then communicated over the Internet to the buyer's workstation **40**.

14 This communication process repeats until the specific part in question is
15 identified by the buyer, using the laboratory workstation. Once the appropriate part is
16 identified, an "order" message **42** is sent from the workstation to the server.
17 Information on the specific part is retrieved by the server from the CAD system **44**,
18 which in turn retrieves the precise information, nomenclature, and cross-references
19 from the CAD database **46**. That information is subsequently provided back to the
20 CAD system from the database **48** and thereafter to the server **50** which converts that
21 information into an HTML page to be displayed on the buyer's computer **52**, after
22 transmission over the Internet. When the buyer decides to order the specific part
23 based upon the information received, the buyer places the order **54** to the server of the
24 present invention. The server thereafter orders the part **56** from a third party for
25 subsequent delivery.

26 Alternatively, the part may be present in the inventory of the organization that
27 is running the server. In that case, the part can subsequently be shipped directly to the
28 laboratory ordering the part.

29 Referring to **Figure 3**, a typical CAD presentation to the laboratory
30 workstation is illustrated. This illustration indicates the layering of views used to
31 identify a particular piece of equipment. Here, a spectrophotometer is used to
32 illustrate the present invention. First, the scientist is shown a front view of the
33 spectrophotometer **60** at a laboratory workstation (not shown). The front view of the
34 spectrophotometer **60** is a CAD image. Also presented are hyperlinks to retrieve a

1 back view **62** of the spectrophotometer, or to retrieve the” inside view **64** of the
2 spectrophotometer. If the scientist clicks on the hyperlink to retrieve the inside view
3 **64**, a more detailed image **66**, or “exploded view” with all parts comprising that
4 equipment identified is displayed. To obtain further information, the buyer simply
5 clicks on any one specific part to view a detailed image of the part **68**. The detailed
6 image of the part **68** also has a layered link which provides detailed part information.

7 Referring to **Figure 4**, when the customer selects the detailed image **68** of
8 **Figure 3**, detailed information on part availability and pricing and cross-references
9 are displayed **70**. Product images **72**, **74** are still available to the buyer on the detailed
10 information page. The product images **72**, **74** have hyperlinks which sends the part to
11 an order page or shopping cart of the buyer. In this manner, the buyer can simply
12 click on the part to visually select a part for purchase. The various graphical files are
13 linked to suppliers who have a database of parts inventory and availability. In this
14 fashion, orders are placed in an automated way with a precise part being identified.
15 Further, the present invention allows any ambiguity in part nomenclature to be
16 avoided by simply allowing the buyer to graphically and visually identify the part to
17 be ordered. The parts list **70** alone shows how difficult it would be for an untrained
18 scientist to identify the correct parts without having graphic images available.

19

20 The present invention also comprises software that allows cross selling to
21 customers of other parts. For example, the fact that one particular part is ordered may
22 indicate that another part should also be ordered in the near future, such as a
23 consumable part. These cross-selling opportunities are also identified to the buyer so
24 that the buyer can do the most complete ordering when the original spare part is being
25 ordered.

26 The system of the present invention is implemented on a Windows NT server
27 having a Pentium III type processor, with associated random access memory and
28 storage. The CAD program currently used by the present invention is CAD by Auto
29 Desk. Although this is not meant as a limitation. Other types of CAD systems may
30 also be organized in the same manner as the present invention to allow the process of
31 importing information and cross-linking the data to ordering information.

32 Referring to **Figures 5A** and **5B**, the operation of one embodiment of the
33 present invention is illustrated. This embodiment addresses operation of the system

1 and method of the present invention where a buyer can access the spare parts
2 purchasing service directly or through a supplier.

3 A buyer accesses the Internet **80** to search for products and/or spare parts. The
4 buyer may encounter the desired products and/or spare parts in two ways. Buyer may
5 view parts available through a supplier web page **82** or through a purchasing service
6 web page **88** such as the purchasing service operated by Lab Parts, Inc.

7 When the buyer searches for the desired parts at the supplier web page **82**,
8 buyer takes several actions. Buyer can browse information about the supplier such as
9 policies, warranties, and the like **84**. Buyer also can choose to browse through
10 graphic images of the available products and parts **86**. Once the buyer chooses to view
11 images, he is linked to the purchase service web page **88**.

12 Once the buyer is linked to the purchase service web page **88**, the buyer then
13 browses images of products **90**. Once the buyer locates the product he is interested in,
14 the buyer then selects the particular part on the image that he would like to purchase
15 **92**. Where a product has subsystems, each subsystem has embedded hyperlinks
16 within the graphic image that further activate until the buyer reaches the part level.
17 When the user selects the part, the embedded hyperlink brings forward purchasing
18 information **94** such as price and availability.

19 To order a part, the buyer clicks on the part image **96**. The buyer is shown the
20 cost, supplier and expected shipping date and enters the quantity desired **98**. The
21 buyer then selects an order link to place the order **100**. The purchasing service
22 verifies whether the buyer is a service subscriber **101**. If the buyer is not a service
23 subscriber, he will not be able to enter the order until he becomes a subscriber. If the
24 buyer is a subscriber, the selected products are entered into the buyers shopping cart
25 **102**. The buyer's shopping cart information is stored on the server operated by the
26 purchasing service. The buyer can continue to view products and parts **88** until he is
27 ready to enter a purchase order.

28 Transaction approval is required in order for the buyer to place the order. A
29 purchasing agent either approves or refuses the transaction **104**. The agent verifies
30 that the buyer has sufficient credit or otherwise is approved to do business with the
31 suppliers of the ordered parts. The purchasing agent notifies the purchasing service of
32 whether the buyer has been approved **106**. If the buyer has been approved, the
33 purchasing service submits the order to each of the designated suppliers **108**.

1 Because the present invention allows access to a large amount of information,
2 content management is an important issue in implementing the system and method for
3 ordering parts. **Figure 6** illustrates a flow diagram of a content management process
4 of the present invention.

5 The content management process begins with a request **610** for either a paper
6 drawing or an AutoCAD-compatible file from the supplier. If the source is a paper
7 drawing **620**, the paper drawing is edited **622**, scanned **624** to obtain a raster image
8 **626** that is either manually or automatically converted to a vector image **628** for input
9 as an AutoCAD compatible drawing **632**.

10 If the source is not a paper drawing **621**, the next step is to check if the source
11 is in an AutoCAD-compatible format **630**. If it is not in an AutoCAD-compatible
12 format, a request **610** is made for either a paper drawing or an AutoCAD-compatible
13 file from the supplier. For AutoCAD-compatible drawings **632**, the next step is to
14 clean up the drawing by removing extraneous information **633** to produce a clean
15 drawing **634**. A bill of materials **635** can then be used to define objects and callouts
16 **636** to produce a baseline "DraWinG" file **637** in AutoCAD's native file format
17 (DWG-format) with objects defined. The typical DWG file is of high resolution and
18 produces a file that is larger than a "Drawing Web Format" or DWF file of
19 AutoDesk's proposed standard format for sharing CAD drawings over the Internet.

20 Once the baseline DWG-format file **637** is obtained, the content manager
21 program can be executed **638** to obtain a smaller DWF file **640**, a default Graphics
22 Interchange Format (GIF) image file of the part **650** and the database entries **660**.

23 The content manager application of the present invention is a program written
24 to take baseline DWGs created in AutoCAD and automatically generate the
25 associated Hyperlinks, DWFs, GIFs, and database entries used by the present
26 invention. Due to the fact that these generated items need to be transferred to a web
27 server, it may be preferable to have the actual placement of files be attended by an
28 operator, with no automation for the final placement of files. However, the content
29 manager application automatically creates all necessary files. **Figure 7** illustrates a
30 typical embodiment of the main window of the application.

31 The general flow of action through the content manager application is
32 illustrated in the additional application screenshots of **figures 8-12** in the following
33 manner:

- 1 1. Load all AutoCAD documents (DWGs) – this takes place automatically if the
2 documents are in an Input Directory specified in content manager application,
3 as set in the File Locations tab of the Options window, illustrated in **figure 11**.
- 4 2. Update the product information data from within content manager application,
5 as shown in the Product Information portion of the main window in **figures 8**
6 (for "instrument" LPI-0001-FP) and **figure 9** (for "subassembly" LP-0001-FA-
7 031C of "instrument" LPI-0001-FP). This is typically manual data entry,
8 however the program could also be modified to accept XML input, so, in the
9 future, the data could be received directly from the supplier.
- 10 3. Execute the automated content manager application procedures, which will
11 create the DWF files, a database input file, and default GIF images. This can
12 be accomplished by selecting the appropriate radio buttons in the main
13 window (see **figure 9**) or by selecting the Options button in the main window
14 and selecting the appropriate Default Actions from pull-down menus under the
15 General tab of the Options window, as illustrated in **figure 10**.
- 16 4. Upload the DWF files and GIF images to the web server and copy to the
17 appropriate directories.
- 18 5. Upload the database input file and copy to the appropriate directory.
- 19 6. The UpdateDatabase procedure will be set up as a Scheduled Task on the
20 server, so it will run automatically at a certain time of day (likely at a slow
21 time, however the load it exerts is not a barrier to running the procedure at any
22 time).

23 The Options screen of **figures 10** and **11** is accessed through the main content
24 manager application screen (**figures 7-9**) with the Options button in the lower right
25 corner of the screen. On the Options screen, the user can set the input and output
26 directories, the hyperlinks to insert into the drawings, and the default actions to take
27 when running the content manager application.

28 Under the Default Actions of the General tab, the user can specify whether the
29 content manager application will perform each specified action on all loaded
30 documents, selected documents, or none of the documents by default. The default
31 actions can be applied to the generation of DWF files, the GIF images or the
32 hyperlinks.

33 Hyperlinks specifies the string to insert into the DWF files when linking to the
34 associated parts or subassemblies (which are drawings). The Hyperlink For Drawings

option specifies what text to insert as the URL for objects that are recognized as Drawings. The Hyperlink For Parts option specifies what text to insert as the URL for objects that are recognized as Parts. Both of these options will be the exact text that will be inserted as the URL, with the exception of the pound sign “#” signifying that the name of the object will be substituted there.

Objects are recognized as Drawings if a DWG file exists in the input directory bearing the name of the object. Drawings only exist for subassemblies. If no drawing exists in the input directory (i.e., no “LP-0001-333182-160.dwg” is in the input directory while we’re looking at an object named LP-0001-333182-160), it is assumed that this object is a Part.

The File Locations tab has an Input Directory entry that specifies where to look for the DWG files that need to be converted, and also specifies where the existing product information flat file (e.g., “Products.System”) is, if it exists. The Output Directory under the File Locations tab specifies where the DWF and GIF output files will be written. Any existing files will always be overwritten without any sort of notification.

The main screen of the content manager application contains data entry fields for each product contained in the drawings. An entry is automatically inserted if none exists when the item is selected from the Defined Objects list box. Each object is named in the drawings by the product id of the object. The fields that need to be entered are as follows:

- *ProductID* – This is entered by default, since this must match up with the object name

- *SKU* – This is the supplier’s SKU, which can be extracted from the ProductID. The ProductID is a System prefix, consisting of a System identifier (“LP”), followed by the supplier id, then followed by the supplier’s SKU. Hence, an SKU can be determined by removing the “LP-xxxx-“ prefix.

- *Name* – The name is the name of the part, and can be any text string up to 80 characters. The name will also be used in the hyperlink as the text displayed in the status bar (the bar at the bottom of the browser window).

- *Description* – This is a short description of the product, and can be any text string up to 100 characters in length. This will be displayed on the product information page when a user chooses to view information about a part.

1 - *Applications* – To add an application, click the Add button directly under the
2 Applications list box and enter a string in the resulting input box. An application can
3 be any string to specify how the product would be used. Applications will very likely
4 be a selected from a set group of applications by the system, however content
5 manager application allows any text to be entered into this box. This text will be used
6 from the main product search page, and displayed in the product detail page. To
7 remove an application, select the application from the Applications list box and click
8 the Remove button directly underneath the Applications list box.

9 - *Child Products* – A child product is added by clicking the Add button directly under
10 the Child Products list box and entering the ProductID of the child product, and can
11 be removed by selecting the child product to remove from the list box and clicking the
12 Remove button under the Child Products list box. A child product needs to be
13 specified for each product that is a direct component of the product being edited.
14 Child Products will only exist for Instruments and Sub-Assemblies. For example, a
15 catapult would be an instrument, and its child products would be the launcher, that
16 pulley thing to pull down the launcher, the lever to lock it down and launch it. The
17 pulley may be sold as a sub-assembly containing child products such as the chain that
18 actually does the pulling, the wheel the chain wraps around, etc.

19 - *Related Products* – Related Products are added by clicking the Add button
20 underneath the Related Products list box and entering a ProductID of a related
21 product, and they are removed by selecting the product to remove and clicking the
22 Remove button underneath the Related Products list box. Related products are used
23 for cross selling in the Product Detail screen.

24 - *The Height, Width, Length, and Weight* fields are not currently used, but are kept for
25 future functionality of automatically calculating shipping charges.

26 - *In Stock* – This indicates whether or not the product is actually in stock. This can be
27 tied in to each supplier's system to keep a live status of the product.

28 After all data is entered for the products, the content manager application is
29 ready to generate all of the files for use on the web site. Pressing the Go button in the
30 lower right corner generates all of the files. As illustrated in **figure 12**, the content
31 manager application can automatically generate lists of missing information. Once
32 everything has been generated (all GIF images and DWF files will be in the output
33 directory specified in Options), it is time to move everything from the output file
34 location to where it goes on the web site.

1 These files are preferably placed in a supplier specific subdirectory on the web
2 site. In a preferred embodiment, no part of this is automatic until there is an
3 established level of confidence in the system. Until that point, a system operator will
4 copy these files to a test server before being put out on the Internet.

5 In a typical embodiment of the System web server, the web site is stored at
6 d:\System\development\wwwroot\. To copy the files to the server, the files are sent
7 using FTP to the System web server. Once the files are on the server, an operator
8 connects, such as through Terminal Services, to the web server and copies the files to
9 the appropriate supplier's directories. An example of a supplier's images and
10 drawings directories is as follows:

11 D:\System\development\wwwroot\supplier\{suppliername}\instruments\images

12 The above is where the GIF images would go.

13 D:\System\development\wwwroot\supplier\{suppliername}\instruments\drawings

14 The above is where the DWF files would go.

15 To ease importing the data into the database, the data saved from the content
16 manager application is inserted into the database by another program, called
17 UpdateDB. Although this program is intended to run automatically on the server, it
18 can be run interactively. When the program is loaded, the operator can specify the
19 input directory, and then click Run to insert everything into the database. It will
20 automatically log errors to the Event Log if there are any, but you can see any errors
21 in the status list while it runs.

22 A system and method for Internet based ordering of parts for scientific
23 instruments and other products have been illustrated. It will be apparent to those
24 skilled in the art that using other types of servers and other types of image display
25 software packages are possible without departing from the scope of the invention as
26 disclosed.

27

1 We claim:

2 1.) A system for ordering components comprising:

3 a user work station connected to the network; and

4 an order computer having a processor and memory, connected to a network;

5 wherein the memory of the order computer comprises software

6 instructions for:

7 accepting a product information request from a user

8 workstation;

9 displaying images of the product;

10 providing breakouts of the parts associated with the product in

11 sequential layers of increasing detail;

12 preparing an order list of desired parts for the user;

13 cross-linking additional product suggestions based on desired

14 parts on the order list; and

15 conducting a purchase transaction of the desired parts for the

16 user.

17 2. The system of claim 1 wherein the memory of the order computer further

18 comprises software instructions for retrieving instructions describing how to install

19 the ordered desired parts.

20 3. The system of claim 1 wherein the wherein the memory of the order computer

21 further comprises software instructions retrieving a reminder message when the

22 ordered desired parts require servicing and deliver the reminder message to the user.

23 4. The system of claim 1 wherein the memory of the order computer further

24 comprises software instructions for conducting a purchase transaction for the user

25 through a secondary supplier.

26 5. The system of claim 1 wherein the memory of the order computer further

27 comprises software instructions for retrieving pre-registered user information for

28 processing an order.

29 6. The system of claim 1 wherein the images of the product are CAD images.

30 7. The system of claim 1 wherein the images of the product are digital images.

31 8. A method of ordering component parts of a product comprising the steps of:

32 viewing an image of a product on a display screen;

33 selecting a portion of the product with a pointing means;

- 1 viewing a layered image of the portion of the product selected on the display
2 screen;
3 selecting a component part of the product with a pointing means from the
4 layered image; and
5 ordering the component part of the product.
- 6 9. The method of claim 8 further comprising the step of viewing ordering suggestions
7 derived from the component part ordered.
- 8 10. The method of claim 8 further comprising viewing on the display a detailed
9 description and the image of the component part.
- 10 11. The method of claim 8 further comprising viewing installation instructions for the
11 component part ordered.
- 12 12. The method of claim 8 further comprising ordering the component part of the
13 product from a supplier.
- 14 13. The method of claim 8 wherein the images of the product are CAD images.
- 15 14. The method of claim 8 wherein the images of the product are digital images.
- 16 15. A system for ordering component parts of a product comprising:
17 a user work station connected to the network; and
18 an order computer having a processor and memory, connected to a network;
19 wherein the order computer memory stores a database of sequentially layered
20 image files showing product architecture from full system to
21 component
22 level.
- 23 16. The system of claim 15 wherein the order computer memory further comprises a
24 database of additional product suggestions cross-linked to the ordered component
25 part.
- 26 17. The system of claim 15 wherein the order computer memory further comprises a
27 database of installation procedures for component parts.
- 28 18. The system of claim 15 wherein the order computer memory further comprises a
29 database of maintenance schedules for component parts.
- 30 19. The system of claim 15 wherein the order computer memory further comprises
31 instructions for executing transactions for purchasing component parts from a
32 plurality of suppliers connected to the network.
- 33 20. The system of claim 15 wherein the order computer memory further comprises a
34 database of pre-registered users.

- 1 21. The system of claim 15 wherein the image files are CAD image files.
- 2 22. The system of claim 15 wherein the image files are digital image files.
- 3 23. A system for ordering component parts of a product comprising:
- 4 a user work station connected to the network; and
- 5 an order computer having a processor and memory, connected to a network;
- 6 wherein the order computer stores cross-linked databases for providing the
- 7 user
- 8 with suggestions for additional parts or products related to an ordered
- 9 component part.
- 10 24. The system of claim 23 wherein the component part and additional parts are
- 11 displayed at the user work station in sequentially layered images.
- 12 25. The system of claim 24 wherein the images are CAD images.
- 13 26. The system of claim 24 wherein the images are digital images.
- 14

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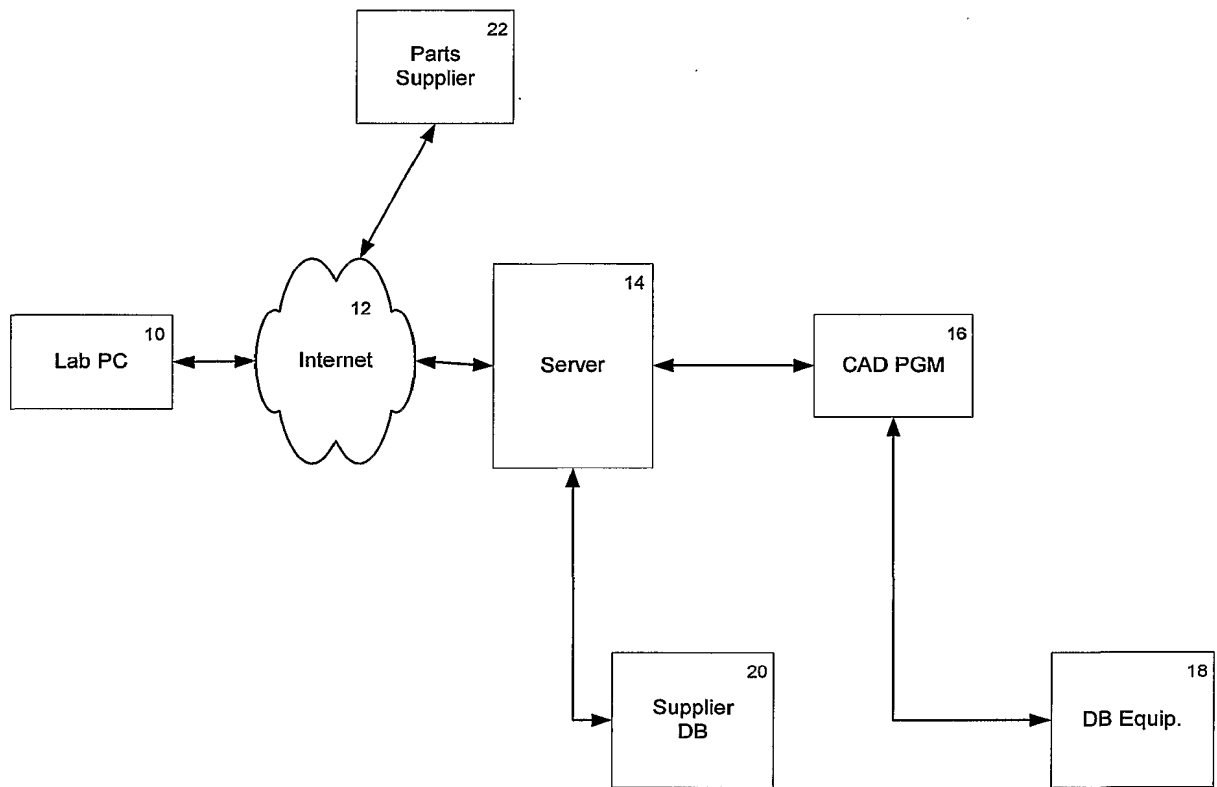


FIGURE 1

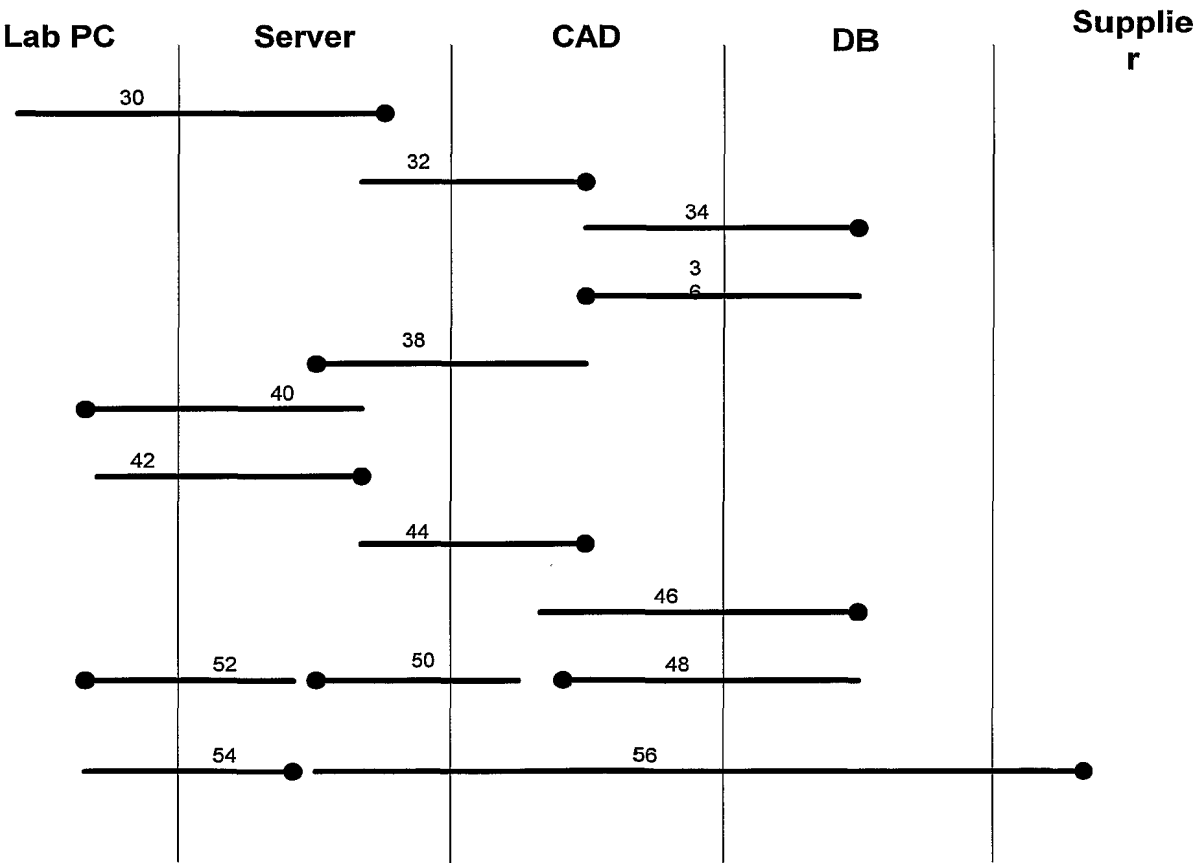


FIGURE 2

Drill-Down Model

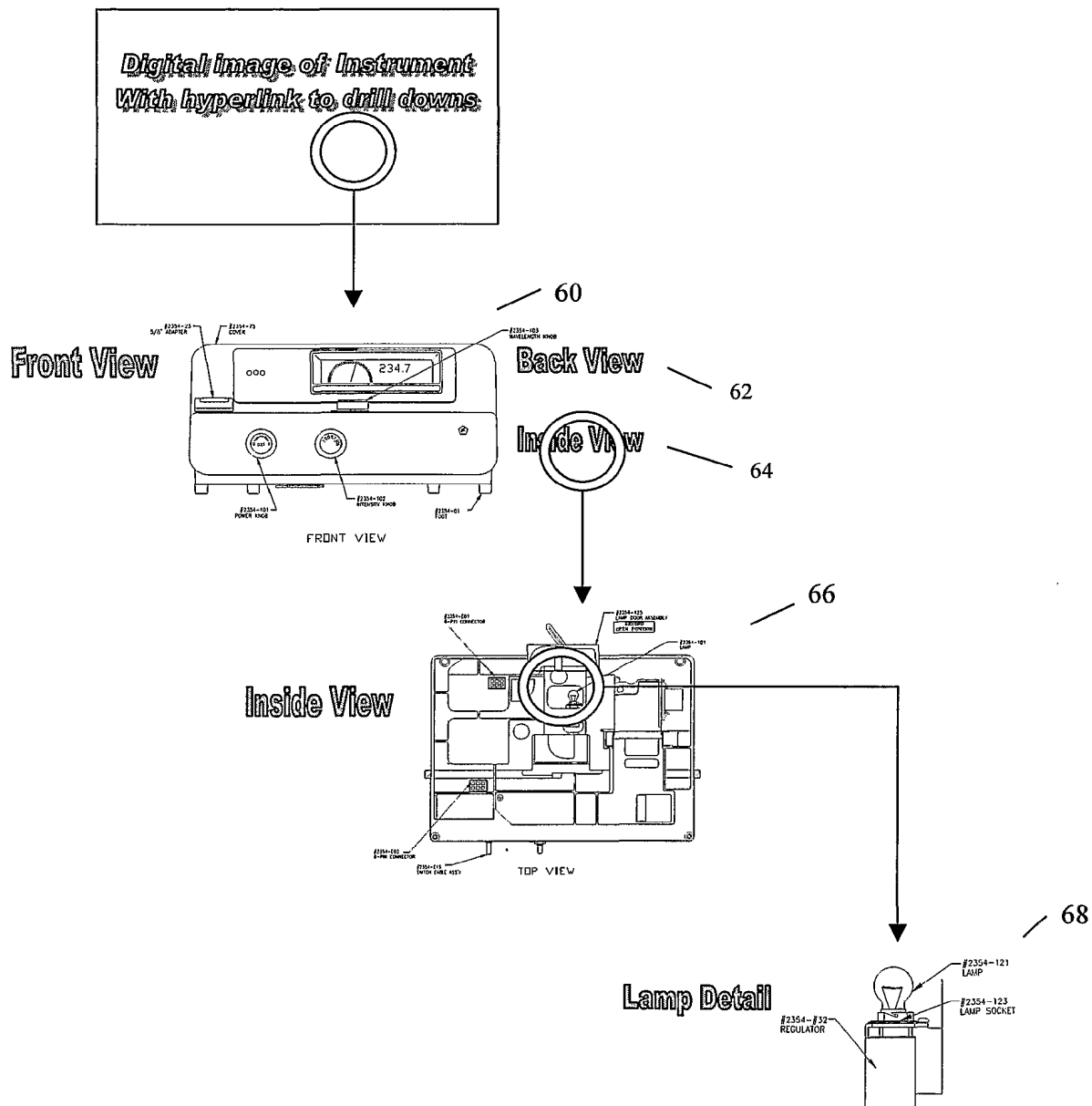


FIGURE 3

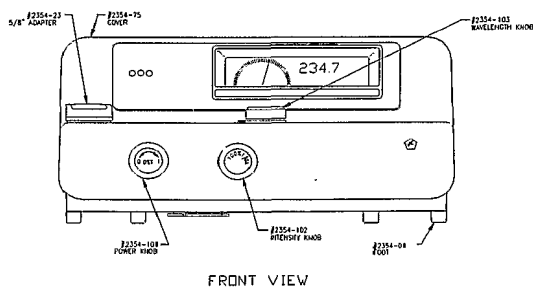
4/13

ASTROID - Spectrophotometer Spare Parts Catalog

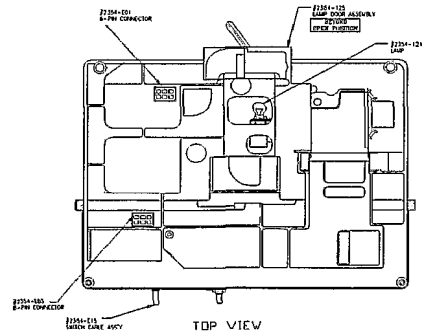
70

Model 2354 LX-200

Part No.	Catalog No.	SKU No.	Description	Qty.	Weight
2354-001	C2354-001	Sk2354-001	Cover Assembly	1	.75
2354-002	C2354-002	Sk2354-002	Transmission Switch	1	1.45
2354-003	C2354-003	Sk2354-003	Light Fixture	1	.025
2354-004	C2354-004	Sk2354-004	Open Ended wiring Harness	1	.58
2354-005	C2354-005	Sk2354-005	Mirror Assembly	2	2.7
2354-006	C2354-006	Sk2354-006	Internal Voltage Regulator	1	9.5
2354-007	C2354-007	Sk2354-007	Transducer	1	.45
2354-008	C2354-008	Sk2354-008	Power Wiring Harness	3	.76
2354-009	C2354-009	Sk2354-009	Power Cord	1	.23
2354-010	C2354-010	Sk2354-010	Power Knob	1	.17
2354-011	C2354-011	Sk2354-011	Rubber Foot	1	.42
2354-012	C2354-012	Sk2354-012	LED Window	15	.16
2354-013	C2354-013	Sk2354-013	Illuminator Filament	2	.25
2354-014	C2354-014	Sk2354-014	Illuminator Lens	3	.14
2354-015	C2354-015	Sk2354-015	Fusible Link	1	.12
2354-016	C2354-016	Sk2354-016	Access Door	1	.27
2354-017	C2354-017	Sk2354-017	Access Door Hinge	1	.35
2354-018	C2354-018	Sk2354-018	Primary Circuit Board	7	1.59
2354-019	C2354-019	Sk2354-019	Fuse Holder	1	13.07
2354-020	C2354-020	Sk2354-020	Mirror Adjust Bracket	3	.24
2354-021	C2354-021	Sk2354-021	Mirror Adjust Spring	2	.53
2354-022	C2354-022	Sk2354-022	Meter Assembly	1	.78
2354-023	C2354-023	Sk2354-023	Meter Baffle	1	6.35



72



74

FIGURE 4

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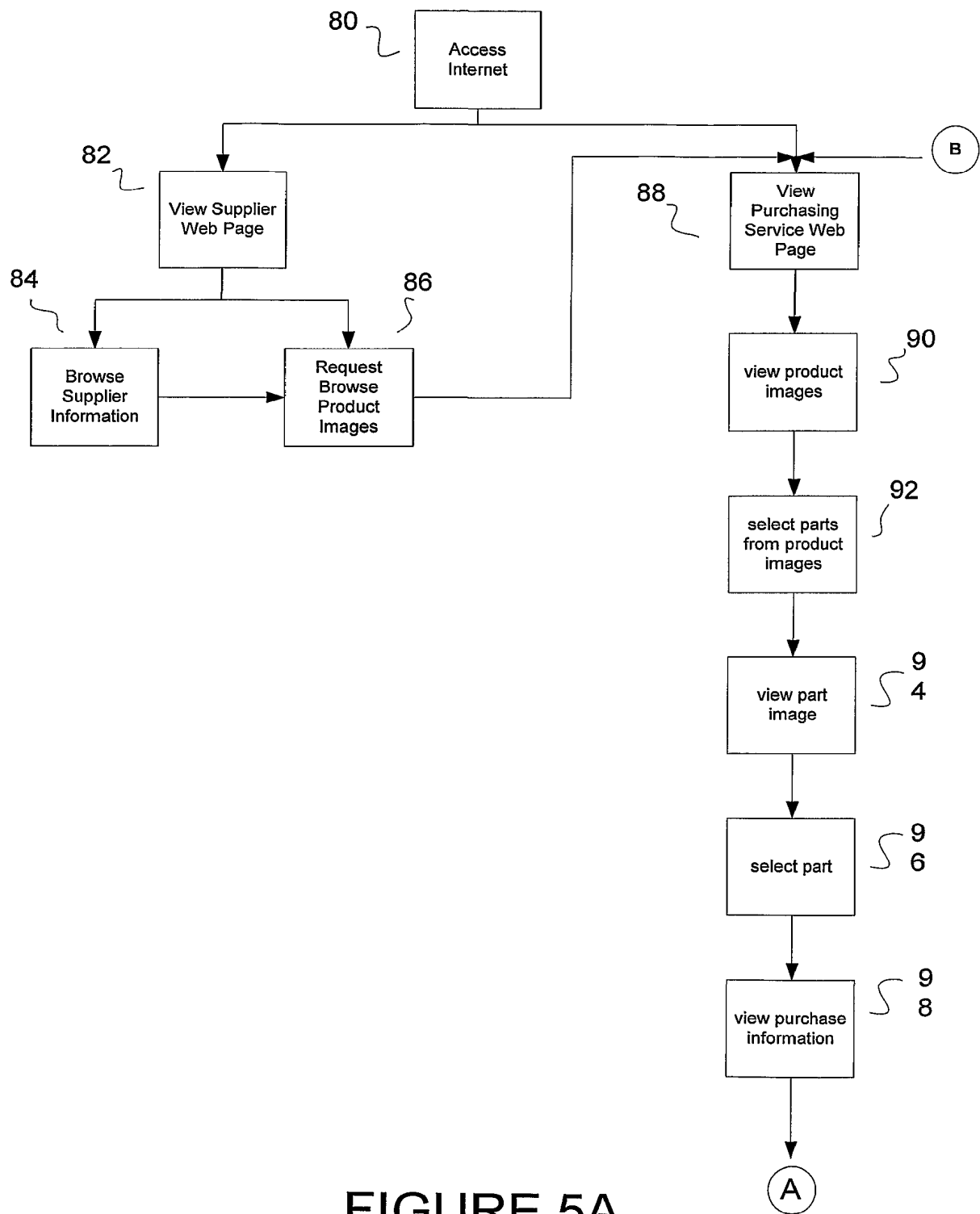


FIGURE 5A

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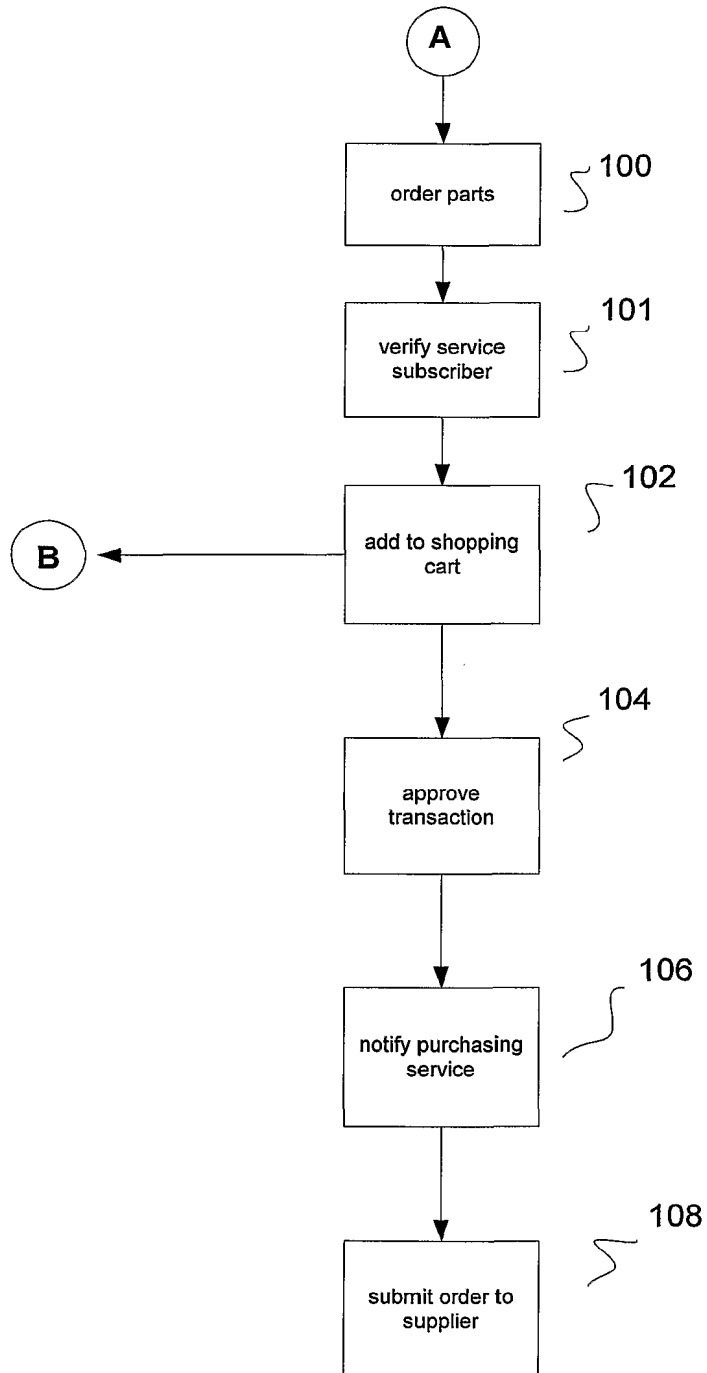


FIGURE 5R

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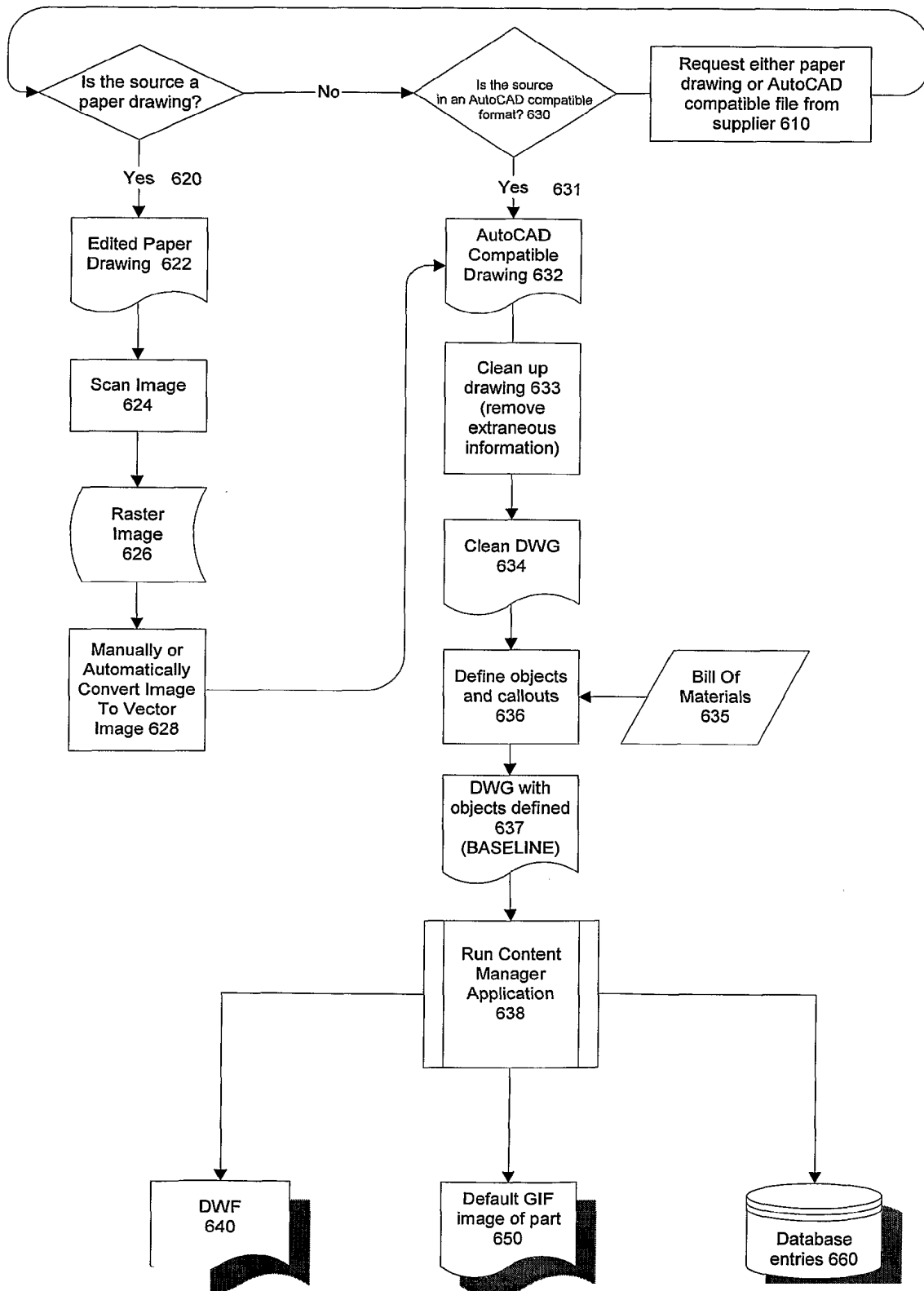


FIGURE 6

LabVortex Content Management

Tools

Loaded Documents

LPV-0001-FP.dwg
LPV-0001-FA-031C.dwg
LPV-0001-FA-072C.dwg
LPV-0001-FASTFILL.dwg
LPV-0001-FP.dwg
LPV-0001-FPmain.dwg

Defined Objects

Product Information

Product ID:

SKU:

Supplier ID:

0

Name:

Description:

Applications:

Child Products:

Related Products:

Add Remove Add Remove Add Remove

Price:

\$0.00

Product Type:

Product Category:

Height:

0

Length:

0

Width:

0

Weight:

0

Revisions:

In Stock?

Yes

Options

Go

Generate GIFs

☒ All Loaded Documents
☐ Selected Document
☐ None

Generate Hyperlinks

☒ All Loaded Documents
☐ Selected Document
☐ None

Generate DWFs

☒ All Loaded Documents
☐ Selected Document
☐ None

Ready.

FIGURE 7

LabVortex Content Management

Tools

Loaded Documents

LP-0001-FP.dwg
LPV-0001-FA-031C.dwg
LPV-0001-FA-072C.dwg
LPV-0001-FASTFILL.dwg
LPV-0001-FP.dwg
LPV-0001-FPmain.dwg

Defined Objects

LP-0001-FA-031C
LP-0001-FA-072C
LP-0001-FA-003D
LP-0001-A-2784
LP-0001-335447-695
LP-0001-Y-2042
LPV-0001-FP

Product Information

Product ID: LP-0001-FP

SKU: FP Supplier ID:

Name: French Press

Description:

Applications:

Child Products:
LP-0001-PC-418
LP-0001-PC-306
LP-0001-PC-190

Related Products:

Add Remove Add Remove Add Remove

Price: \$3.00 Product Type: Instrument Product Category: French Pressure Co

Height: 0 Length: 0 Width: 0

Weight: 0 Revision: In Stock?

New

Generate GIFs

☒ All Loaded Documents
☐ Selected Document
☐ None

Generate Hyperlinks

☒ All Loaded Documents
☐ Selected Document
☐ None

Generate DWGs

☒ All Loaded Documents
☐ Selected Document
☐ None

Options

Go

Ready.

FIGURE 8

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LabVortex Content Management

Tools

Loaded Documents

LP-0001-FP.dwg
LPV-0001-FA-031C.dwg
LPV-0001-FA-072C.dwg
LPV-0001-FASTFILL.dwg
LPV-0001-FP.dwg
LPV-0001-FPmain.dwg

Defined Objects

LP-0001-FA-031C
LP-0001-FA-072C
LP-0001-FA-003D
LP-0001-A-2784
LP-0001-335447-695
LP-0001-Y-2042
LPV-0001-FP

Product Information

Product ID: LP-0001-FA-031C

SKU: FA-031C

Supplier ID:

Name: 40K French Pressure Cell

Description:

Applications:

Child Products:

Related Products:

Add Remove

Add Remove

Add Remove

Price: \$0.00

Product Type: Sub-Assembly

Product Category: French Pressure Ce

Height: 0

Length: 0

Width: 0

Weight: 0

Revision:

☒ In Stock?

< New >

Generate GIFs

☒ All Loaded Documents

☐ Selected Document

☐ None

Generate Hyperlinks

☒ All Loaded Documents

☐ Selected Document

☐ None

Generate DWFs

☒ All Loaded Documents

☐ Selected Document

☐ None

Options

Go

Ready.

FIGURE 9

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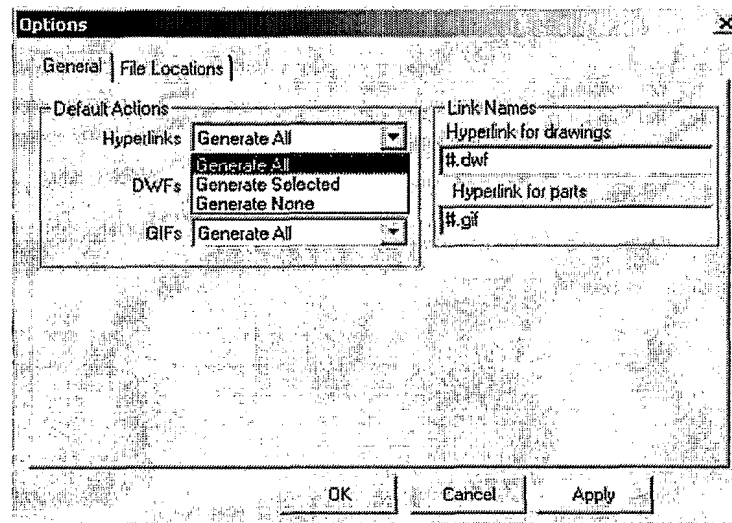


FIGURE 10

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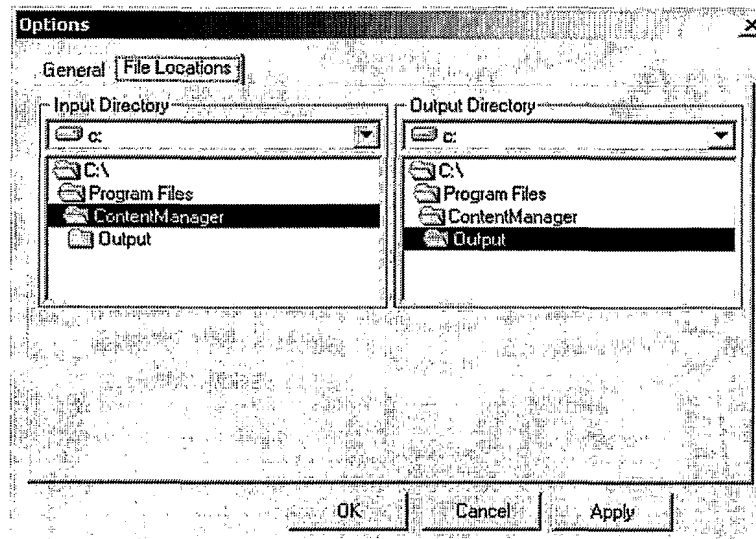


FIGURE 11

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LabVortex Content Management

Tools

Loaded Documents:

- LPI-0008-SC250DDA.dwg
- LPV-0008-110c1007.dwg
- LPV-0008-121-1027.dwg
- LPV-0008-SC250DDA_BACK.dwg
- LPV-0008-SC250DDA_BACKWITH.dwg
- LPV-0008-SC250DDA_CHAMBER.dwg
- LPV-0008-SC250DDA_INSIDEBACK.dwg
- LPV-0008-SC250DDA_INSIDEFRONT.dwg
- LPV-0008-SC250DDA_SCHEMATIC.dwg

Defined Objects:

- LPV-0008-SC250DDA_BACK
- LPV-0008-SC250DDA_CHAMBER
- LPV-0008-SC250DDA_INSIDEFRONT
- LPV-0008-SC250DDA_INSIDEBACK
- LPV-0008-SC250DDA_BACKWITH
- LPV-0008-SC250DDA_SCHEMATIC

Product Information

Product ID: LPI-0008-SC250DDA
SKU: SC250DDA Supplier ID: [0]
Name: [0]
Description: [0]
Applications: [0] Child Products: [0] Related Products: [0]
Price: \$0.00 Product Type: Part Product Category: Analyzer
Height: [0] Length: [0] Width: [0]
Weight: [0] Revision: [0] In Stock? [X]
New

Generate GIFs

☒ All Loaded Documents
☐ Selected Document
☐ None

Generate Hyperlinks

☒ All Loaded Documents
☐ Selected Document
☐ None

Generate DWFs

☒ All Loaded Documents
☐ Selected Document
☐ None

Options

Missing Names

- LPI-0008-SC250DDA
- LP-0008-121-1027
- LP-0008-121-1056-00
- LP-0008-121-6075-00
- LP-010202
- LP-0008-121-6076-00
- LP-0008-110c1007
- LP-0008-090-1004-00
- LP-0008-H00-0043-00
- LP-0008-121-6067-00
- LP-0008-H60-0006-01
- LP-0008-H50-0063-05
- LP-0008-121-6073-00

Missing Prices

- LPI-0008-SC250DDA
- LP-0008-121-1027
- LP-0008-121-1056-00
- LP-0008-121-6075-00
- LP-0008-121-6074-00
- LP-010202
- LP-0008-121-6076-00
- LP-0008-110c1007
- LP-0008-090-1004-00
- LP-0008-H00-0043-00
- LP-0008-121-6067-00
- LP-0008-H60-0006-01
- LP-0008-H50-0063-05
- LP-0008-121-6073-00

Missing Suppliers

- LPI-0008-SC250DDA
- LP-0008-121-1027
- LP-0008-121-1056-00
- LP-0008-121-6075-00
- LP-010202

Remitting Missing Names

Remitting Missing Prices

Remitting Missing Suppliers

Remitting Missing Images

FIGURE 12